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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF UTAH

OLD MILL BRICK LLC, a Utah limited liability company, Plaintiff, vs. MS INTERNATIONAL INC., a California corporation, Defendant.	CASE NO: 2:23-cv-00900 District Judge: Dale A. Kimball **COMPLAINT FOR PATENT INFRINGEMENT** **Jury Trial Demanded**

Plaintiff, Old Mill Brick LLC ("Plaintiff" or "OMB"), by and through its attorneys, Dorsey & Whitney, LLP, for its complaint against Defendant MS International Inc. ("Defendant" or "MSI"), allege the following:

NATURE OF THE ACTION AND SUMMARY OF RELIEF SOUGHT

1. OMB invests significant resources to develop and design high quality building materials. OMB has been awarded several patents from The United States Patent and Trademark Office to protect its proprietary designs and inventions in the building products industry. Among

OMB's inventions is its novel thin brick sheet invention for use in wall or floor coverings, which is protected by a family of United States patents.

2. On information and belief, MSI imports and sells a thin brick sheet product called BrickStaks (the "Infringing BrickStaks Product") which infringes OMB's patent rights. MSI sells the Infringing BrickStaks Product which, as will be discussed more fully below, is a direct copy of OMB's patented design and infringes OMB's patent rights, thus denying OMB the exclusivity to which it is entitled under the Patent Act.

3. OMB files this Complaint to immediately and permanently stop MSI's blatant and willful patent infringement pursuant to the Patent Act, 35 U.S.C. §§ 271, 283-285, and to recover all damages and monetary relief warranted by MSI's acts of infringement.

PARTIES

4. Old Mill Brick LLC is a Delaware limited liability company with its principal place of business of 14932 Concord Park Drive, Bluffdale, Utah. OMB manufactures and sells building products throughout the United States, including a novel thin brick sheet invention for use in wall or floor coverings. OMB owns the '322 patent, which covers certain aspects of its proprietary technology.

5. Defendant MS International, Inc. is a California limited liability company with a principal place of business at 2095 N. Batavia Street, Orange, California, 92865.

6. Defendant also has a place of business in this district located at 2291 S. Commerce Center Dr., Suite 400, West Valley, Utah 84120.

7. On information and belief, Defendant imports and sells the Infringing BrickStaks Product in the United States, including in this District, which infringes OMB's patent rights.

JURISDICTION AND VENUE

8. This is an action for patent infringement under the United States Patent Act, specifically 35 U.S.C. § 271. This Court has subject matter jurisdiction over this dispute pursuant to 28 U.S.C. §§ 1331 and 1338(a).

9. This Court has personal jurisdiction over the Defendant because, on information and belief, it conducts business in and has committed acts of infringement within this Judicial District by selling the Infringing BrickStaks Product in Utah.

10. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400.

FACTUAL BACKGROUND

11. With the advent of thin bricks for building supplies, since 2007, OMB has invested significant time and resources into developing new techniques and products in order to enable more efficient ways to apply thin bricks to surfaces and to fulfill a long-felt, unresolved need in the industry.

12. About a decade ago, as a result of its innovative efforts and investments, OMB introduced its patented thin brick sheet invention for use in wall or floor coverings, which it sells under the name Brickwebb™.

13. OMB developed the Brickwebb™ technology for the purpose of making wall installation more consistent and the product more efficient for application.

14. Given the innovative nature of OMB's Brickwebb™ technology, the United States Patent and Trademark Office (USPTO) has granted OMB several patents to protect its proprietary innovations. Among OMB's patents is U.S. Patent No. 11,781,322 entitled Fiber Enforced Thin

Brick Sheet and Process ("the '322 patent"). A copy of the '322 patent is attached as Exhibit A. The USPTO issued the '322 patent on October 10, 2023.

15. The '322 patent is valid and enforceable.

16. The '322 patent claims a novel and non-obvious method for making a mesh-backed thin brick sheet to provide a more efficient way to apply thin bricks to surfaces.

17. Following OMB's creation of their Brickwebb™ product, OMB began selling their patented products online through a variety of retailers throughout the United States.

18. OMB's Brickwebb™ product achieved immediate and significant commercial success, with rapid growth in sales and demand for the product.

19. The Home Depot, the world's largest home improvement retailer, took note of OMB's impressive success with the Brickwebb™ product and offered to sell the Brickwebb™ product in store, beginning with a trial period of 5 stores.

20. After in-store sales of the Brickwebb™ product through The Home Depot began proving the market demand for the Brickwebb™ product, The Home Depot indicated it would be expanding to 300 stores.

21. In the end, however, the success of OMB's Brickwebb™ product was so overwhelming, that The Home Depot increased the in-store presence of OMB's Brickwebb™ product to 1,300 stores, rather than just 300, creating game-changing demand for OMB's revolutionary and patented products.

22. In 2021, on information and belief, after noticing the success of OMB's Brickwebb™, one of OMB's retailers approached MSI—a much larger supplier than OMB—and encouraged MSI to copy OMB's Brickwebb™.

23. Thereafter, on information and belief, MSI contacted a manufacturer in Turkey for the purpose of creating a copycat thin-brick product and provided the manufacturer with a box of OMB's patented Brickwebb™ product to use in creating a competing product for MSI.

24. On information and belief, the Turkish manufacturer expressed hesitation in copying OMB's patented product and asked MSI to indemnify it against potential claims of patent infringement from OMB.

25. MSI proceeded to copy OMB's product and currently imports and sells the Infringing BrickStaks Product for use in wall or floor coverings throughout the United States, which MSI knows are made using a process covered by the claims of the '322 patent.

26. On October 11th, 2023, OMB notified MSI via a letter to Defendant's Co-Chief Executive Officers, Rajesh Shah and Rupesh Shah, identifying the '322 patent, explaining in detail that importing and selling the Infringing BrickStaks Product in the United States infringes the '322 patent, and demanding that Defendant halt its unlicensed importation and sale of the products.

27. Despite this notice and despite having knowledge of OMB's patent rights, MSI has continued importing and selling the Infringing BrickStaks Product in direct competition with OMB with a reckless and blatant disregard of OMB's patent rights.

28. MSI's continued actions of importing, using, selling, and offering for sale the Infringing BrickStaks Product has injured, is injuring, and will cause irreparable injury to OMB if not preliminarily and permanently enjoined.

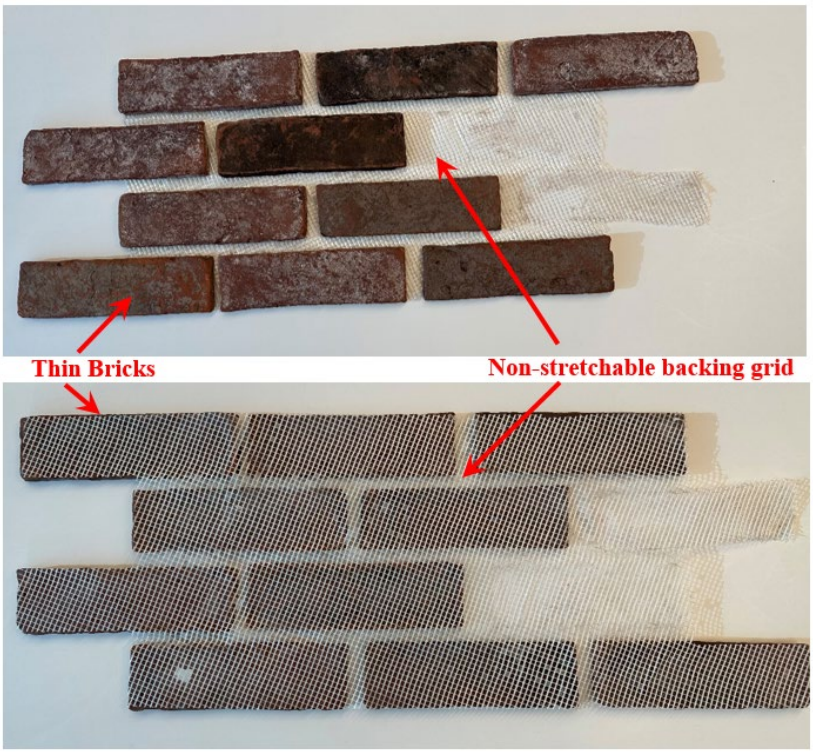
29. MSI's continued actions of making, using, selling, and offering for sale the Infringing BrickStaks Product after having knowledge of the '322 patent demonstrates a deliberate

and conscious decision to infringe the '322 patent, or at the very least a reckless disregard of OMB's patent rights and therefore constitutes willful infringement.

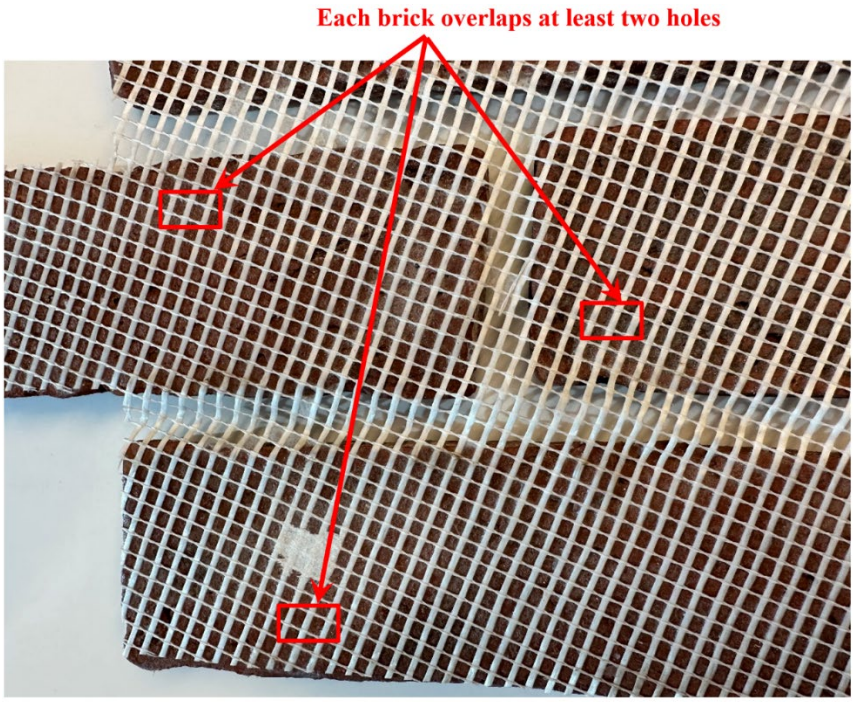
30. The process by which the Infringing BrickStaks Product is made satisfies every limitation recited in claims 1-3, 5-6, 8-12, and 16-20 of the '322 patent and, therefore, MSI's importation and sale of the Infringing BrickStaks Product infringes the '322 patent.

31. By way of example, as demonstrated below, the Infringing BrickStaks Product establishes that it was made using the process recited in at least claim 1 of the '322 patent and, therefore, infringes the '322 patent.

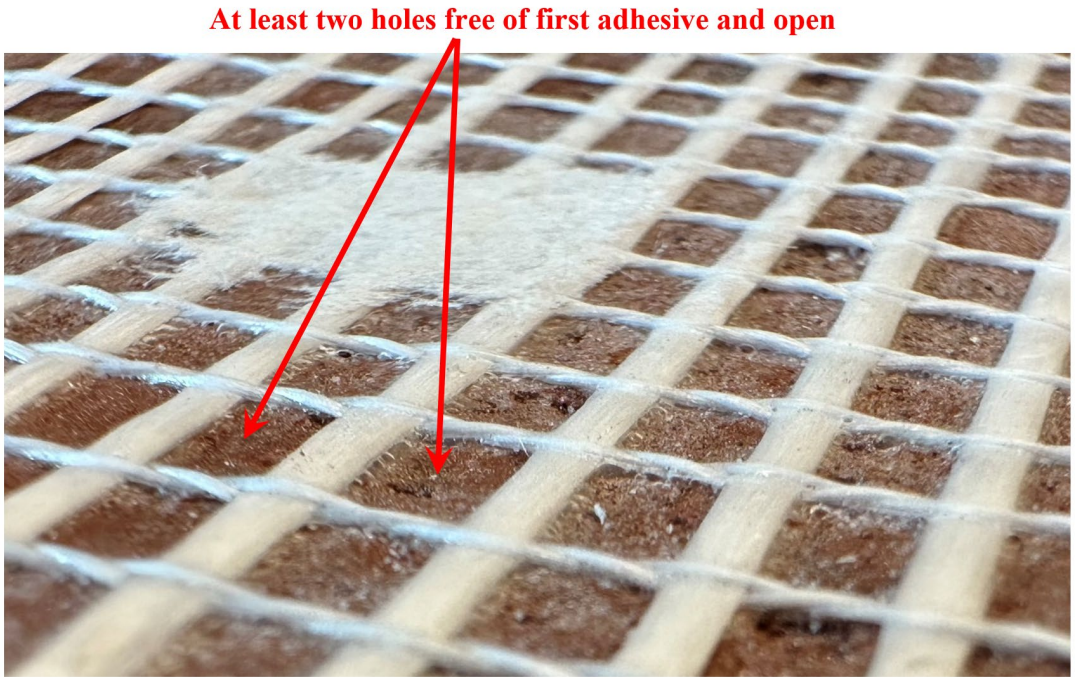
32. The Infringing BrickStaks Product is made by adhering a plurality of thin bricks to a first side of a non-stretchable backing layer grid with a plurality of holes using a first adhesive.



33. The bricks in the Infringing BrickStaks Product are adhered to the backing layer such that a portion of a rear surface of each brick overlaps at least two holes in the backing layer.



34. At least two holes that are overlapped by each brick in the Infringing BrickStaks Product are free of the first adhesive and open such that a second adhesive can penetrate through the holes to adhere the thin brick sheet to a wall or floor surface.



COUNT I - PATENT INFRINGEMENT (35 U.S.C. § 271)

35. Plaintiff hereby incorporates all preceding paragraphs in support of Count I by this reference.

36. On information and belief, Defendant imports the Infringing BrickStaks Product into the United States from Turkey where they are manufactured, and offers for sale and sells the Infringing BrickStaks Product in the United States directly and through a variety of retailers.

37. Because Infringing BrickStaks Product is made using a process that satisfies each and every element of at least claims 1-3, 5-6, 8-12, and 16-20 of the ’322 patent, Defendant’s acts of offering to sell, selling, and/or importing the Infringing BrickStaks Product in the United States constitute acts of direct infringement under 35 U.S.C. § 271(g).

38. To the extent Defendant manufacturers the Infringing BrickStaks Product in the United States, Defendant's actions of making or having made the Infringing BrickStaks Product constitutes infringement under 35 U.S.C. § 271(a).

39. Given Defendant's actual notice of the '322 patent and Plaintiffs' allegations of infringement, Defendant's infringing activity has and continues to demonstrate a deliberate and conscious decision to infringe the '322 patent, or at the very least a reckless disregard of Plaintiffs' patent rights and therefore constitutes willful infringement.

40. Defendant's continued infringing activity has and will continue to cause irreparable injury to Plaintiff.

41. Plaintiff is entitled to an injunction under 35 U.S.C. § 283 prohibiting Defendant from further making, using, offering to sell, selling, and importing the Infringing BrickStaks Product and any other infringing product.

42. Plaintiff is entitled to recover all monetary damages caused by Defendant's infringing conduct under 35 U.S.C. § 284, including lost profits and/or reasonable royalties.

43. Given Defendant's deliberate and willful infringement, Defendant's conduct is exceptional and Plaintiff is entitled to enhanced damages and attorneys' fees and costs along with prejudgment interest under 35 U.S.C. §§ 284, 285.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for the following relief:

1. That this Court enter judgment that Defendant has directly infringed the asserted claims of the '322 patent and that the asserted claims of the '322 patent are valid and enforceable;

2. That this Court enter a preliminary and permanent injunction against Defendant prohibiting Defendant from any further infringement of the '322 patent, including an injunction prohibiting any further importation, sale or offers to sell the Infringing BrickStaks Product and any other product that infringes the '322 patent;

3. That this Court award OMB all damages caused by Defendant's infringing actions;

4. That this Court find this case exceptional and award OMB enhanced damages and all attorneys' fees and costs incurred by OMB in this action;

5. For any further relief that this Court deems equitable and just.

JURY DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, OMB demands a jury trial on all issues so triable.

Respectfully submitted this 14th day of December, 2023.

DORSEY & WHITNEY LLP

By: *s/ Mark A. Miller*
Mark A. Miller
Elliot J. Hales
Michele M. Myer
Attorneys for Plaintiff Old Mill Brick LLC

EXHIBIT A

US011781322B2

(12) **United States Patent**
Hunsaker et al.

(10) **Patent No.: US 11,781,322 B2**
(45) **Date of Patent: Oct. 10, 2023**

(54) **FIBER ENFORCED THIN BRICK SHEET AND PROCESS**

(71) Applicant: **Old Mill Brick LLC**, Bluffdale, UT (US)

(72) Inventors: **Jason Hunsaker**, Woodland Hills, UT (US); **Jeffrey Walker**, South Weber, UT (US); **Garrick Hunsaker**, Bluffdale, UT (US)

(73) Assignee: **Old Mill Brick LLC**, Bluffdale, UT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **17/805,193**

(22) Filed: **Jun. 2, 2022**

(65) **Prior Publication Data**

US 2022/0307272 A1 Sep. 29, 2022

Related U.S. Application Data

(63) Continuation of application No. 17/664,850, filed on May 24, 2022, which is a continuation of application (Continued)

(51) **Int. Cl.**

E04F 13/09	(2006.01)
E04F 13/08	(2006.01)
E04F 13/14	(2006.01)
E04F 13/073	(2006.01)
E04F 15/08	(2006.01)
E04F 15/16	(2006.01)

(52) **U.S. Cl.**

CPC ***E04F 13/09*** (2013.01); ***E04F 13/0733*** (2013.01); ***E04F 13/0862*** (2013.01); ***E04F 13/0885*** (2013.01); ***E04F 13/142*** (2013.01); ***E04F 13/147*** (2013.01); ***E04F 15/08*** (2013.01); ***E04F 15/166*** (2013.01); *Y10T 156/1092* (2015.01)

(58) **Field of Classification Search**

CPC ... E04F 13/09; E04F 13/0733; E04F 13/0862; E04F 13/0885; E04F 13/142; E04F 13/147; E04F 15/08; E04F 15/166; Y10T 156/1092

See application file for complete search history.

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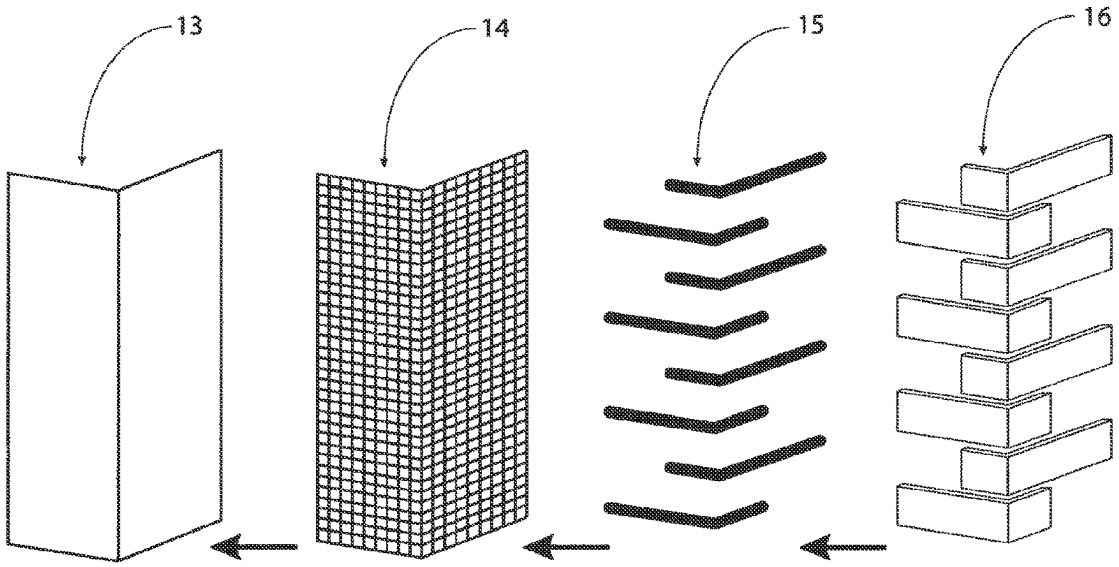
Primary Examiner — Linda L Gray
(74) *Attorney, Agent, or Firm* — Dorsey & Whitney LLP

(57) **ABSTRACT**

Methods of manufacturing thin brick sheets are disclosed. The thin brick sheets can be used as a wall or floor covering. The methods can include adhering a plurality of thin bricks to a backing layer with an adhesive. The backing layer defines a grid that includes a plurality of holes, is non-stretchable, and can provide strength and rigidity to the thin brick sheets.

20 Claims, 4 Drawing Sheets



Related U.S. Application Data

No. 16/601,378, filed on Oct. 14, 2019, now abandoned, which is a continuation of application No. 16/059,994, filed on Aug. 9, 2018, now Pat. No. 10,443,247, which is a continuation of application No. 15/380,733, filed on Dec. 15, 2016, now Pat. No. 10,072,426, which is a continuation of application No. 13/278,815, filed on Oct. 21, 2011, now Pat. No. 9,556,619.

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Notice of Allowance dated Sep. 19, 2016 for U.S. Appl. No. 13/278,815.
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Fig. 1:

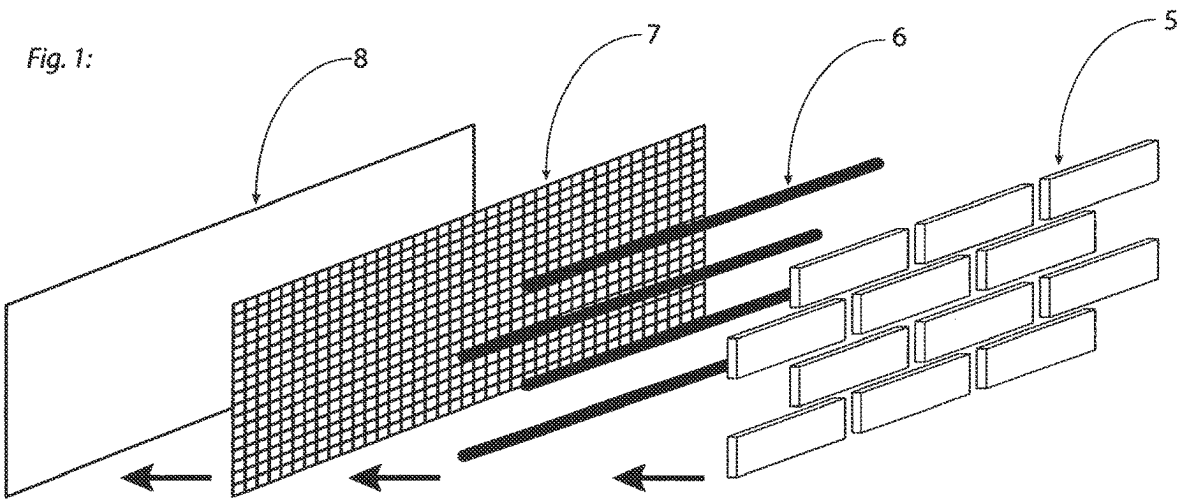


Fig. 2:

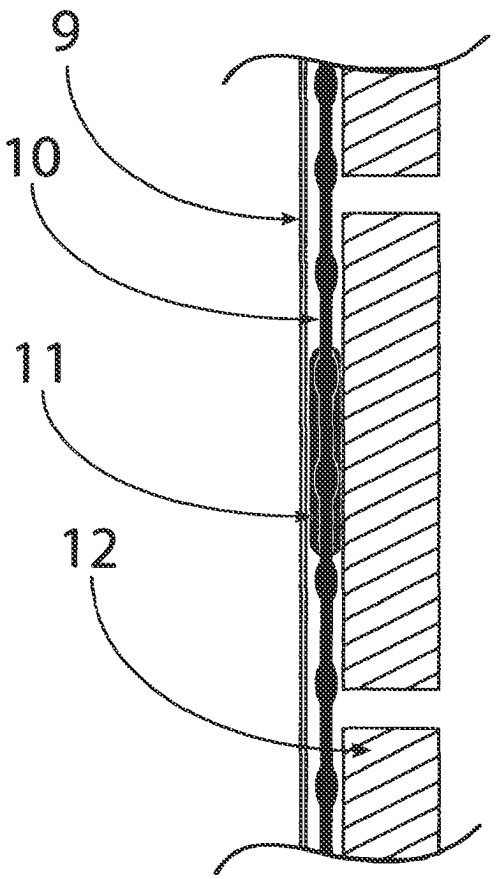


Fig. 3:

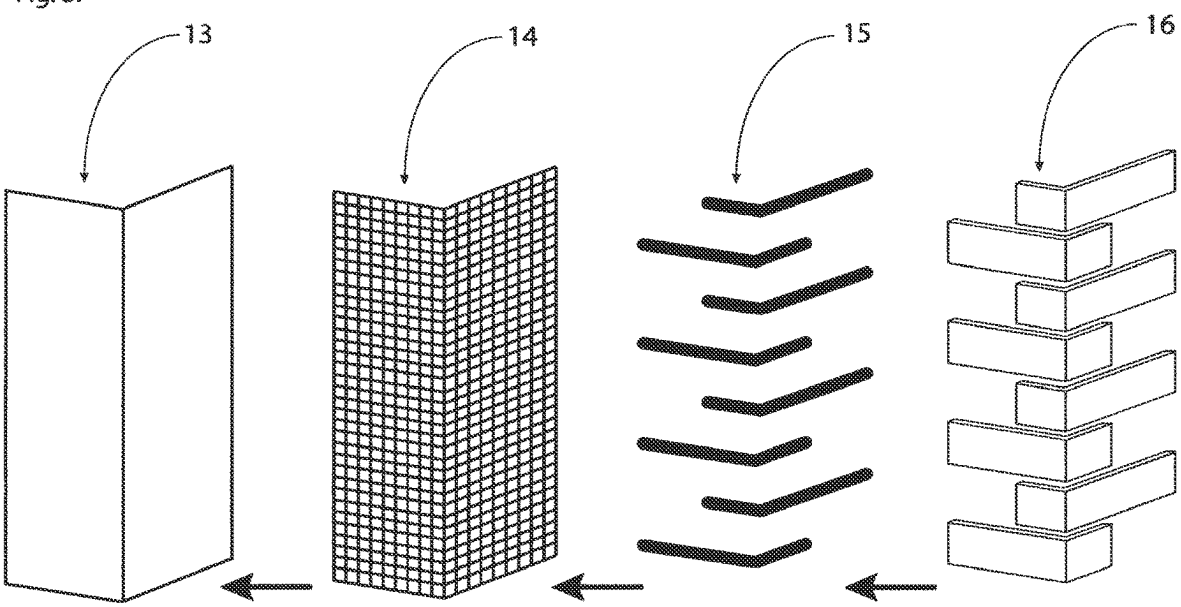
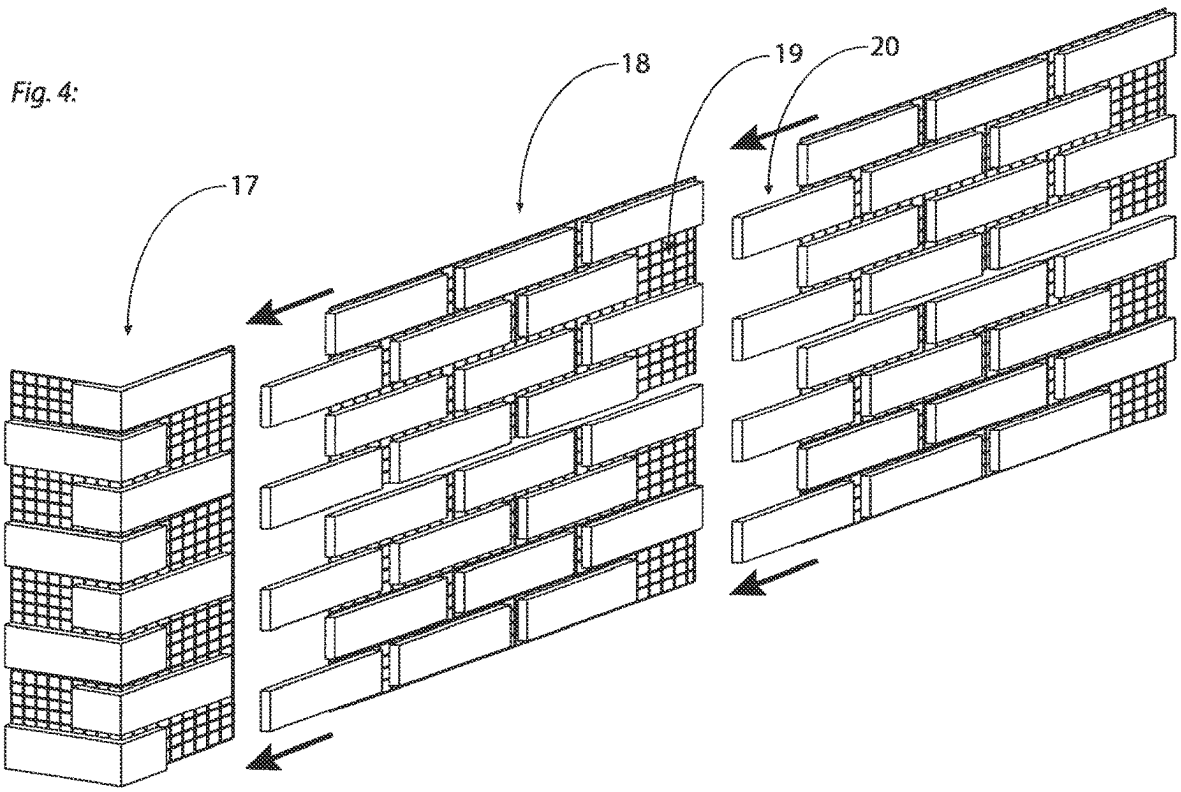


Fig. 4:



FIBER ENFORCED THIN BRICK SHEET AND PROCESS

RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 17/664,850, filed on May 24, 2022 and titled FIBER ENFORCED THIN BRICK SHEET AND PROCESS, which is a continuation of U.S. patent application Ser. No. 16/601,378, filed on Oct. 14, 2019 and titled FIBER ENFORCED THIN BRICK SHEET AND PROCESS, which is a continuation of U.S. patent application Ser. No. 16/059,994, filed on Aug. 9, 2018 and titled FIBER ENFORCED THIN BRICK SHEET AND PROCESS, which is a continuation application of U.S. patent application Ser. No. 15/380,733, filed on Dec. 15, 2016 and titled FIBER ENFORCED THIN BRICK SHEET AND PROCESS, which is a continuation application of U.S. patent application Ser. No. 13/278,815, filed on Oct. 21, 2011 and titled FIBER ENFORCED THIN BRICK SHEET AND PROCESS, each of which is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to fabricated thin brick sheets for use as wall or floor coverings and a process for manufacturing such sheets. The invention is a veneer, one layer of which comprises of an array of glued or adhesive applied thin bricks.

2. The Prior Art

Thin brick has long been a highly desired backing material for walls and floors, for interior and exterior, and the like. It is attractive, durable, waterproof, and fireproof. Thin bricks are available in a wide variety of sizes, shapes, colors, patterns, textures, and surface finishes. They are uniquely suited to a variety of applications ranging from decorative accents in the homes to complete commercial exterior finishes.

Thin brick per se is relatively inexpensive, being made essentially from clay minerals fired at high temperature. Not so its installation. The conventional construction of a thin brick wall, for example, begins with the installation of metal lath over a vapor barrier secured sheathing. Next, a scratch coat of mortar is applied to the lath followed by an accurately leveled mortar bed for the thin brick. Should the scratch coat be uneven, a separate, additional leveling layer of mortar may be required. When using adhesive brick are set one by one then grouted using mortar applied between thin brick. Individual thin bricks must be cut using special equipment and tools to fit them to spaces requiring less than a full thin brick or to fit them around fixtures and the like.

Thin brick setting is a skilled occupation, commanding high wages. The level of skill required, and the time-consuming nature of conventional thin brick installation render the process very expensive. Unfortunately, due to the high cost of thin brick installation, some builders have attempted installation shortcuts in a misguided effort to save money. Improper installation techniques frequently result in expensive repairs for the homeowner or general contractor.

Given this situation, it is not surprising to find a number of proposed solutions to the problem in the prior art. The concept of a prefabricated thin brick sheet which would not require any thin brick setting at the installation site has long been considered. However, the thin brick sheets previously described have all proved unsatisfactory for reasons such as insufficient strength, excessive weight, complexity of installation, and high labor cost. And none have met with commercial success to any significant extent.

Thus, it will be appreciated that the prefabricated thing brick sheets known in the art prior to this disclosure all relied on a core part, commonly of steel, plastic, foam, or a relatively thick backing layer to impart some measure of structural strength and rigidity to the sheets. These cores substantially increase the thickness of the sheets, and this in turn necessitates special mounting hardware for installation.

SUMMARY OF THE MENTION

The present invention comprises a thin, lightweight thin brick sheet which greatly simplifies and reduces the cost of installing thin brick walls, floors, and the like. The invention further comprises a method of making such a sheet and or installation.

The thin brick sheets of the invention include a plurality of thin bricks pre-assembled and mounted on a fiber enforced sheet. The spaces between the thin bricks are filled with grout to seal these spaces against moisture, etc. The term "grout" should be understood to include both the conventional thin, cementitious mortar used for filling joints in masonry as well as chemicals that solidify, such as polyurethanes, room temperature vulcanizing silicones, other elastomers, plastics, and the like. The sheets normally feature a regular pattern of substantially rectangular thin bricks in a side-by-side, laterally spaced rectangular array; however, a wide variety of thin brick shapes and trim pieces are contemplated.

The thin bricks of the invention are preferably thinner and lighter than common bricks. Thus, the thin bricks will generally be greater than 0.125 inch thick, and less then 3 inches. The light weight of the thin bricks makes it possible for relatively large sheets of such thin bricks to be assembled and handled with comparative ease. The fiber enforced sheet may be made of a variety of materials. The sheets themselves will normally be flexible, but it is important that they be substantially non-stretchable. This quality is important because the backing and backing sheets on each thin brick sheet co-act to render the sheet rigid enough to be readily handled and worked.

Working of the thin brick sheets for example, may include cutting or drilling with tools such as razor knifes, table saws, and the like. After the thin bricks are adhered the sheets can then be cut between bricks using just a razor knife. This enables such working to be carried out with very little breaking, chipping, or other damage to the thin brick elements.

Applying thin brick sheets over exterior require cementitious adhesive sealing all seams and applying a roll on water barrier following all building codes. When applying thin brick sheets over interior, a thinset, mastic or equivalent will be required.

It will be apparent that the sheets be strong, substantially non-stretchable, substantially water-resistant, chemically stable, and capable of being bonded to the thin bricks as well as to plaster, wood, cement, block, drywall sheets [gypsum board; sheetrock], etc. with conventional construction adhesives. As mentioned above, woven fiberglass fabric is an especially preferred component of the backing sheets; however, other fabrics or reinforcing agents considered suitable

include polyester, graphite, aramid, or carbon fibers, or any combination thereof. Especially preferred is a fiberglass combination.

Synthetic adhesives suitable for impregnating the backing sheets include unsaturated fiberglass, phenolic, epoxy, and silicone adhesives.

In general, the adhesives should possess the same general characteristics as the backing sheets. The cured adhesive should be strong, substantially non-stretchable, substantially impervious to moisture, function as an adhesive to bond the back surfaces of the thin bricks to the sheet, and be capable of being bonded to common wall surfaces and the like with conventional construction adhesives such as thin set or mastic and the like.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** Is a cross-sectional view of fiber enforced thin brick sheets of the said invention.

FIG. **2** Cut thru order of fiber enforced thin brick process.

FIG. **3** Is a cross-sectional view of corner thin brick using fiber enforced thin brick sheets in the process of the said invention.

FIG. **4** View of an example layout of the corner thin brick sheets of said invention showing application arrangement and edges of such a sheet.

DETAILED DESCRIPTION OF THE DRAWINGS

The invention will best be a, understood by referring to the drawings.

FIG. **1** shows a portion of a thin brick sheet in cross section. Individual thin brick elements (**5**) are supported by adhesive (**6**) on a fiber-reinforced backing layer (**7**). Anti-adhesive paper is used on back of thin brick sheets for separation and adhesive release (**8**).

FIG. **2** schematically it a cut thru fabricated thin brick sheets. Thin layer of anti-adhesive paper to prevent bonding of the backing layer adhesive (**9**). Reinforcing fabric (**10**) for the backing layer. Adhesive at a high temperature is then impregnated or applied to either brick or fiber-reinforced backing layer (**11**). Individual thin brick elements (**12**).

FIG. **3** schematically illustrates corner thin brick sheets. A thin layer of anti-adhesive paper is used to prevent bonding of the backing layer adhesive that is curved in the same position as a typical thin brick corner (**13**). A reinforced fabric sheet is shown that is curved in the same position as a typical thin brick corner (**14**). An adhesive at a high temperature is impregnated or applied to either a corner brick or fiber-reinforced backing layer (**15**). The thin corner brick positioner (**16**) helps in the proper spacing and alignment process.

FIG. **4** shows in detail the layout of an optional embodiment of the thin brick sheets and corner sheets of the present invention. Corner sheets are typically applied first (**17**) where bricks are placed opposite of each other. The thin bricks are staggered in typical brick patterns (**18**) and fiber-reinforced backing layer extends beyond the thin brick elements on one edge of the sheet (**19**), while on the opposite edge the thin brick elements overhang the fiber-reinforced backing layer by an equal distance (**20**). This permits abutting thin brick sheets to be joined together in such a way that the joint between bricks are the proper space to adjacent thin brick sheets.

Additional embodiments are also disclosed. In some embodiments, the fiber enforced thin brick sheet is semi-flexible, substantially non-stretchable, and comprises glass filaments. The fiber enforced thin brick sheet further comprises a thin brick layer comprising a plurality of thin bricks bonded on their back surfaces to a backing layer.

In some embodiments, the fiber enforced thin brick sheet comprises thin bricks. The thin bricks can comprise multiple types of brick, including clay, cast brick, wire cut, and the like. The thin bricks can be formed or cut to be thin bricks. The thin bricks are applied to a backing layer. The backing layer is a fiber-reinforced sheet.

In some embodiments, the fiber enforced thin brick sheet comprises thin bricks. The way in which you lay individual thin bricks can vary in multiple ways, and show a variety of patterns or bonds. Different combinations of brick bond examples include running bond, stack bond, English bond, and the like.

In some embodiments, the backing layer is a fiber-reinforced sheet.

In some embodiments, the adhesive is selected from the group consisting of bonding adhesive, epoxy adhesive, and silicone adhesive.

In some embodiments, the reinforcing fiber is selected from one or more members of the group consisting of graphite fibers, aramid fibers, carbon fibers, and fiberglass fibers. In some embodiments, the fibers are woven into a grid like fabric.

In some embodiments, the backing layer is poly fiber. In some embodiments, the backing layer is formed of spun bonded glass filaments.

In some embodiments, the fiber enforced thin brick sheets overhang on one edge while on the opposing end the thin brick overhangs the backing layer as to interlock an adjoining sheet.

In some embodiments, an adhesive of the backing layer bonds the thin bricks of the thin brick layer to the backing layer.

In some embodiments, the thin bricks are spaced from one another and the spaces between adjacent thin bricks in the thin brick layer are filled with mortar or grout.

In some embodiments, the spaces between adjacent thin bricks in the thin brick layer are filled with a cement base material.

In some embodiments, the adhesive is a silicone based product.

In some embodiments, a process for producing a fiber enforced thin brick sheet comprises adhering individual thin bricks into a rectangular array, leaving spaces of approximately ¼ inch to ¾ inch between adjacent thin bricks.

In some embodiments, a process for producing a fiber enforced thin brick sheet comprises a reinforcing fabric made of fibers selected from the group consisting of fiberglass fibers, graphite fibers, aramid fibers, carbon fibers, and poly fibers.

In some embodiments, a process for producing a fiber enforced thin brick sheet comprises an adhesive selected from the group consisting of unsaturated fiberglass adhesive, phenolic adhesive, epoxy adhesive, and silicone adhesive. In some embodiments, the adhesive is an elastomeric or silicone base adhesive.

In some embodiments, a process for producing a fiber enforced thin brick sheet comprises thin brick grout. In some embodiments, the thin brick grout is cement based. In some embodiments, the thin brick grout is sand based.

In some embodiments, a process for producing a fiber enforced thin brick sheet comprises substantially non-stretchable fiber enforced thin brick sheet having holes ranging from 1/16 inch to 2 inches for adhesive bonding.

In some embodiments, a process for producing a fiber enforced thin brick sheet comprises a fiber enforced mesh sheet ranging from 2.5 oz to 30 oz and is designed to hold the weight of multiple thin bricks.

In some embodiments, a process of applying thin bricks comprises accelerating the curing of the adhesive by the application of heat. In some embodiments, the adhesive is of high heat thus accelerating the curing time.

In some embodiments, a continuous process for producing a fiber enforced thin brick sheet on an endless belt, where thin bricks are applied using an adhesive, comprises: (a) feeding a reinforcing fabric onto the endless belt; (b) passing the reinforcing fabric on the endless belt through an impregnating zone wherein the fabric is saturated with a high heat adhesive; (c) passing the adhesive-saturated fabric through a thin brick application zone wherein the array of thin bricks are applied to the adhesive-saturated fabric; (d) passing the adhesive-impregnated fabric with thin bricks through an oven which raises the temperature of the adhesive to increase its curing rate and to bond the thin bricks to the backing layer comprising of fabric reinforced glue adhesive; (e) moving the fiber enforced thin brick sheet to a cutting zone wherein the sheet is cut into sections of desired size. Optional grouting steps include: (f) moving the substantially cured backing layer with bonded thin bricks through a grouting zone wherein material is deposited in the spaces between the edges of adjacent thin bricks on the sheet; (g) moving the substantially cured backing layer with bonded thin bricks through a cleaning zone wherein water, air, or cleaning solution is applied.

In some embodiments, a fiber enforced sheet of thin bricks for use as a wall surface or the like comprises: a flexible, substantially non-stretchable, backing sheet; a plurality of thin bricks bonded on their back surfaces to said backing sheet in a side-by-side, laterally spaced array; and a filler grout between said thin bricks. In some embodiments, the fiber enforced backing is adhered to the brick using an adhesive.

In some embodiments, the fiber enforced sheet of thin bricks for use as a wall surface or the like further comprises a contact adhesive between the backing sheet and the back surfaces of the thin bricks.

In some embodiments, the backing sheet is a fabric impregnated with a synthetic adhesive.

In some embodiments, the thin bricks are rectangular, and the sheet array is rectangular also.

In some embodiments, a process for making an anti-adhesive paper enforced sheet comprises: non bonding the back surfaces of a plurality of thin bricks to a substantially non-stretchable backing sheet covering the back surfaces of said thin bricks with a flexible sheet used for releasing of adhesive from said sheets.

In some embodiments, a fiber enforced sheet of thin bricks for use as a wall surface or the like comprises: a flexible, substantially non-stretchable backing sheet; a plurality of thin brick corners bonded on their back surfaces to said backing sheet in a stacked vertically spaced array; and a filler grout between said thin bricks.

In some embodiments, a corner brick is bonded to the fiber enforced backing. In some embodiments, the fabric is bent at an angle to that of the matching brick.

In some embodiments, a process of manufacturing fiber sheets bonded to corner brick comprises using adhesive bonders.

In some embodiments, the corner thin brick is adhered in such a way as to give ¼ inch to ¾ inch exact spacing between corner bricks.

In some embodiments, a process for producing a fiber enforced thin brick sheet on an assembly process of hand gluing individual thin bricks to a fiber sheet comprises using a grid, template or stencil.

In some embodiments, a process for producing a fiber enforced corner thin brick sheet on an assembly process of hand gluing individual thin bricks to a fiber sheet comprises using a grid, template or stencil.

In some embodiments, a process of adhering thin brick to fiber enforced sheets comprises using an adhesive that has high elevated temperatures thus curing quickly so as to facilitate manufacture of the thin brick sheets in a timely way.

In some embodiments, a process of adhering fiber enforced sheets to a floor or a wall comprises using an adhesive that penetrates thru said fiber enforced sheets providing a grid like bonding pattern for grout or mortar.

In some embodiments, a process of adhering fiber enforced sheets to a floor or a wall comprises using an adhesive that penetrates thru said fiber enforced sheets and adheres to a majority of the exposed thin brick thus helping bond the brick to the floor or the wall.

In some embodiments, a process of adhering fiber enforced sheets to a floor or a wall comprises applying an adhesive to a wall or a floor followed by applying a fiber enforced sheet thus enabling the adhesive to penetrate thru the fiber enforced sheet to help hold or cling to wall or floor surfaces.

SUMMARY

Alternatively, the sheets of the present invention may be manufactured individually in multiple sizes. Thin bricks are placed face down or face up within the confines of a frame designed to hold the loose thin bricks in a rectangular array. Gaps are left between the edges of adjacent thin bricks to permit the subsequent insertion of grout as is well known in the art.

Reinforcing fabric for the hacking layer is then placed over the exposed rear surfaces of the thin brick elements in the array. A adhesive is then applied to the fabric first or brick first, saturating it and extending through it to contact the thin bricks or sheets. As the adhesive cures it bonds the backing layer to the thin bricks. This process may be accelerated by the application of heat to raise the temperature of the adhesive/catalyst mixture thereby increasing its cure rate.

When the adhesive of the backing layer has substantially cured, the hacking layer with the thin brick elements bonded to it is inverted, exposing the front face of the thin brick elements. Grout or mortar other suitable or alike material is applied to the spaces between the thin bricks.

In use, the thin brick sheets are mounted to conventional floor or wall surfaces using construction adhesives of the type previously mentioned.

While one specific embodiment of the invention has been disclosed herein, it should be understood that this disclosure is made by way, of illustration rather than limitation. Numerous changes may be made by those skilled in the art, particularly with reference to the dimensions, materials and configuration disclosed herein. Changes of this nature would not depart from the spirit of the invention or the scope of the appended claims.

What is claimed:

1. A method of manufacturing a thin brick sheet, comprising:

adhering a plurality of thin bricks to a first side of a backing layer with a first adhesive, wherein the backing layer defines a grid that comprises a plurality of holes, wherein the backing layer is non-stretchable, wherein the plurality of thin bricks are adhered to the backing layer such that a portion of a rear surface of each brick of the plurality of thin bricks overlaps at least two holes of the plurality of holes in the backing layer, and wherein the at least two holes are free of the first adhesive and open such that a second adhesive can penetrate through the at least two holes to adhere the thin brick sheet to a wall or floor surface.

2. The method of claim **1**, wherein the plurality of thin bricks are adhered to the backing layer with spaces of about ¼ inch to about ¾ inch between adjacent bricks of the plurality of thin bricks.

3. The method of claim **1**, wherein the backing layer comprises at least one of fiberglass, polyester, graphite, aramid, or carbon.

4. The method of claim **1**, wherein the backing layer is impregnated or saturated with the first adhesive.

5. The method of claim **1**, further comprising curing the first adhesive.

6. The method of claim **1**, wherein the plurality of thin bricks are adhered to the backing layer in a running bond pattern or a stack bond pattern.

7. The method of claim **1**, wherein the portion of the rear surface of each brick of the plurality of thin bricks is free from the first adhesive.

8. The method of claim **1**, wherein the plurality of thin bricks comprise one or more of clay bricks, cast bricks, or wire cut bricks.

9. The method of claim **1**, wherein the plurality of thin bricks consists of four rows of bricks.

10. The method of claim **1**, wherein the plurality of thin bricks are spaced from one another and free of grout and mortar between adjacent bricks of the plurality of thin bricks.

11. A method of manufacturing a thin brick sheet, comprising:

adhering a plurality of thin bricks to a first side of a backing layer with a first adhesive, wherein adjacent bricks of the plurality of thin bricks are spaced about ¼ inch to about ¾ inch from each other, wherein adjacent bricks of the plurality of thin bricks are free of grout and mortar between each other, wherein the backing layer defines a grid that comprises a plurality of holes, wherein the plurality of thin bricks are adhered to the backing layer such that a portion of a rear surface of each brick of the plurality of thin bricks overlaps at least two holes of the plurality of holes in the backing layer, and wherein the at least two holes are free of the first adhesive and open such that a second adhesive can extend through the at least two holes to bond each brick of the plurality of thin bricks to a wall or floor surface during installation.

12. The method of claim **11**, wherein the backing layer comprises at least one of fiberglass, polyester, graphite, aramid, or carbon.

13. The method of claim **11**, wherein the backing layer is impregnated or saturated with the first adhesive.

14. The method of claim **11**, further comprising curing the first adhesive.

15. The method of claim **11**, wherein the portion of the rear surface of each brick of the plurality of thin bricks is free from the first adhesive.

16. The method of claim **11**, wherein the plurality of thin bricks comprise one or more of clay bricks, cast bricks, or wire cut bricks.

17. The method of claim **11**, wherein the plurality of thin bricks consists of four rows of bricks.

18. The method of claim **17**, wherein the plurality of thin bricks consists of three bricks per row of the four rows.

19. A method of manufacturing a thin brick sheet, comprising:

adhering a plurality of thin bricks to a first side of a backing layer with a first adhesive, wherein adjacent bricks of the plurality of thin bricks are spaced about ¼ inch to about ¾ inch from each other, wherein adjacent bricks of the plurality of thin bricks are free of grout and mortar between each other, wherein the plurality of thin bricks consists of four rows of bricks, wherein the backing layer defines a grid that comprises a plurality of holes, wherein the plurality of thin bricks are adhered to the backing layer such that a portion of a rear surface of each brick of the plurality of thin bricks overlaps at least two holes of the plurality of holes in the backing layer, and wherein the at least two holes are free of the first adhesive and open such that a second adhesive can extend through the at least two holes to bond each said brick to a wall or floor surface during use.

20. The method of claim **19**, wherein the plurality of thin bricks consists of three bricks per row of the four rows.

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